



• August 15-18, 2010 • Dallas, Texas •  
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U.S. General Services Administration  
John J. Duncan Federal Building  
Energy Round-Up!!

# U.S. General Services Administration John J. Duncan Federal Building





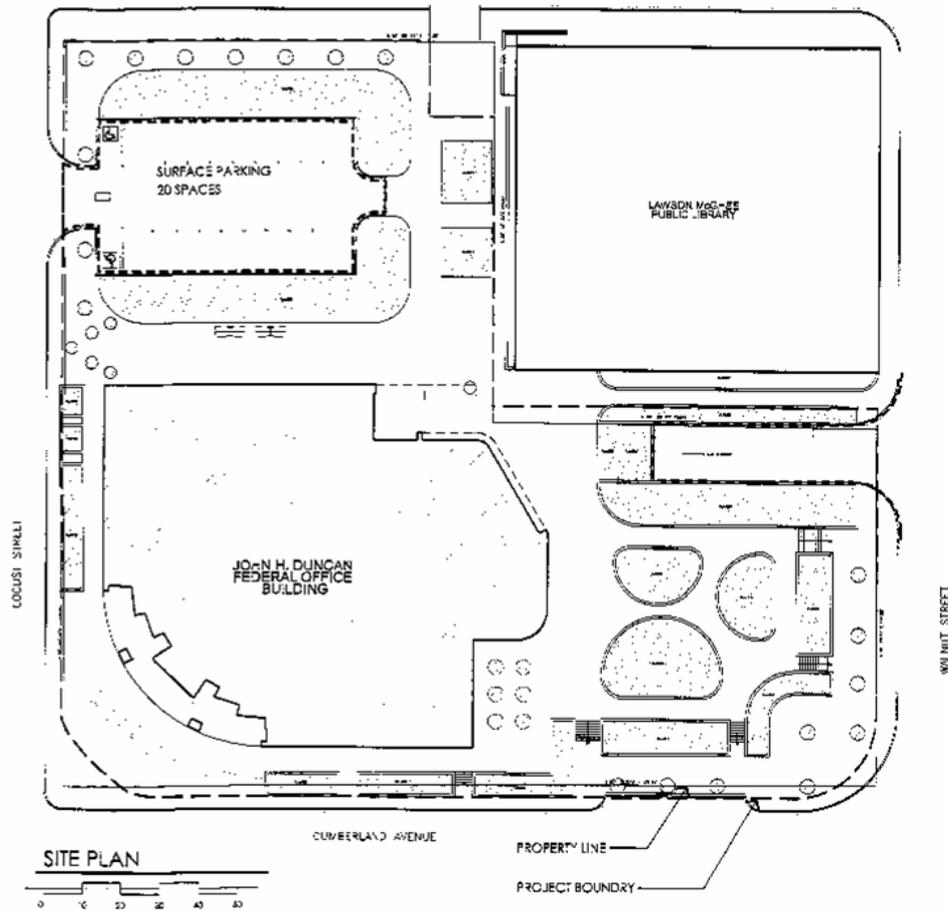
## John J. Duncan Information



- Eight Story Facility Dedicated in 1988
- 172,683 USF and 2 Underground Parking Decks
- Seventeen Agencies (FBI, IRS, OSM...)
- 100% Occupancy
- 91% Customer Satisfaction
- Constructed of Concrete and Steel w/ Tennessee Granite and Glass Facade







BUILDING FOOT PRINT	21,785 sf
NATURAL AREA	15,258 sf
PERVIOUS PAVING	38,934 sf
<b>TOATAL SITE AREA</b>	<b>75,977sf</b>



LEED - EB CERTIFICATION  
JOHN DUNCAN FEDERAL OFFICE BUILDING  
710 LOCUST STREET KNOXVILLE, TENNESSEE

Site Metrics  
**SITE PLAN**



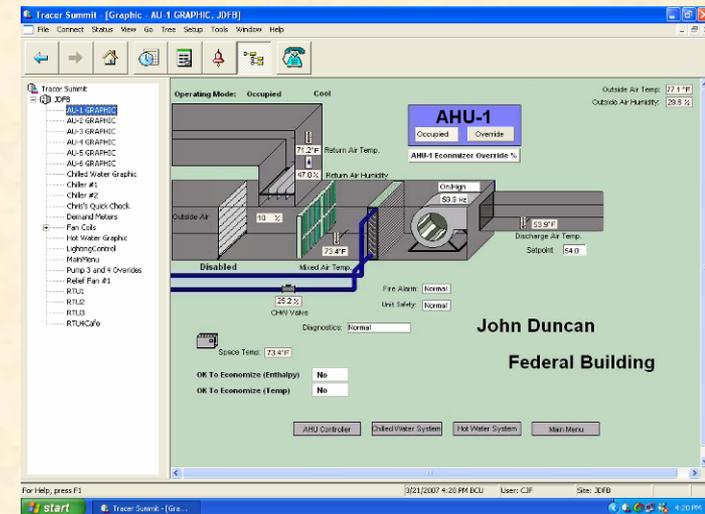
## Success Model



- Goal Setting (E.O. 13123, Energy Star, FEMP, LEED, Earth Award)
- Team Work
  - GSA
  - Federal Tenants
  - Urban-Meridian Joint Venture
  - Knoxville Utilities Board
  - University of Tennessee
  - Contractors

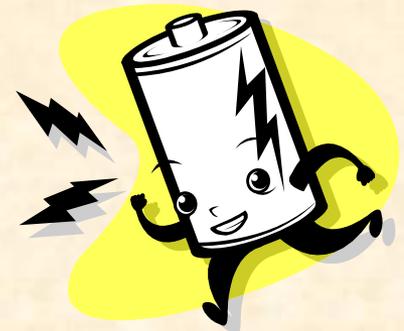
# Energy Management and Smart Decisions

- Opportunity: Outdated BCS, Costly Repairs
- Solution: 360 Degree Approach to Implementation of BCS
  - Trane Building Control System:
    - Chill Plant
    - Boilers
    - AHU's
    - VFD's (Building Motors)
    - Lighting
    - Economizer
    - Restroom Exhaust
    - Garage Relief Fan
    - Supplemental Air Units (After Hours)



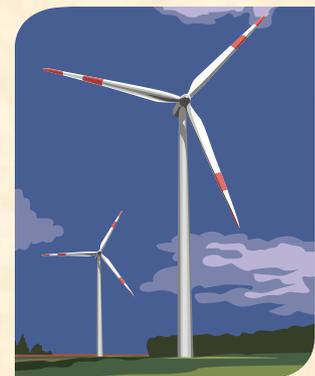
# Energy Management and Smart Decisions II

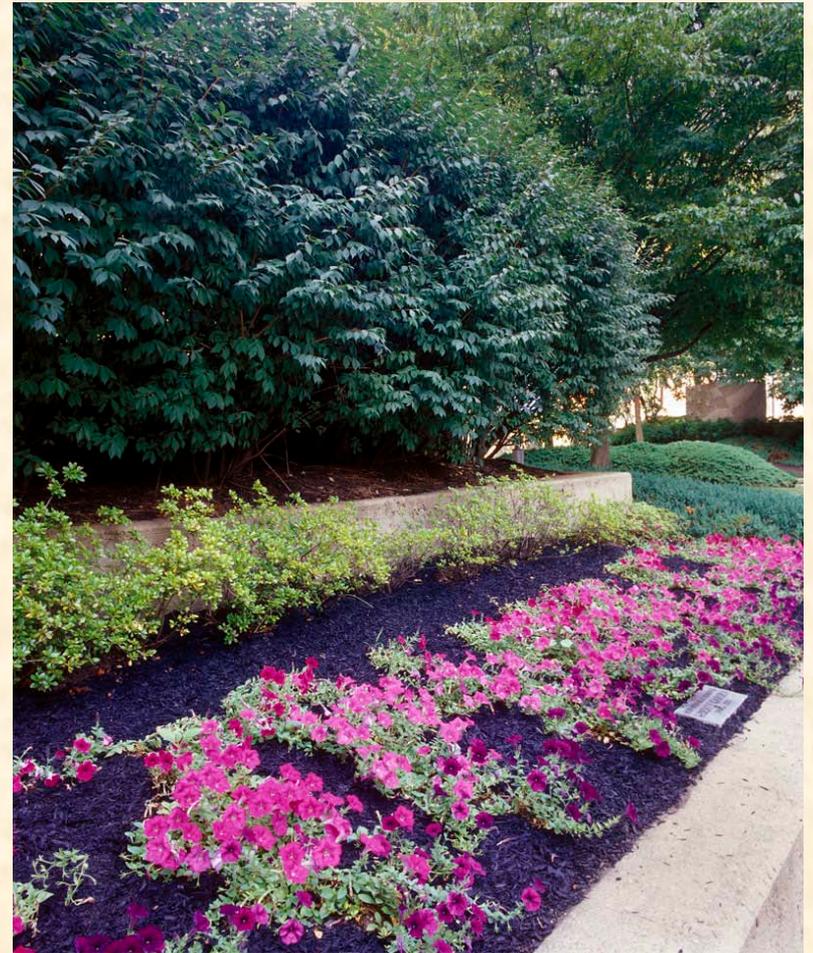
- Opportunity: Outdated Cooling Tower, Large Motors, Leaking
- Solution: SWOT Analysis of Tower, Replacement Determined
  - New Stainless Steel Tower
  - Premium Efficiency Fill
  - Replacement of Two 15hp Motors with Two 7.5hp Premium Efficiency Motors
  - Variable Frequency Drives
  - Access Ladders and Cat Walk



# Energy Management and Smart Decisions III

- Construction
  - Lighting Retrofits, Motion Sensors, Natural Day Lighting, Recycling of Products, IAQ, Recycled Content Products, Low VOC Products
- Building Lighting Retrofit
  - Offices, Hallways, Maintenance/Cleaning Areas, Garage
- Demand Metering & Load Shedding
- Purchasing Green Power (Solar, Wind, Methane)





# Water Savings

- Cooling Tower
- Waterless Urinals
- ½ gpm Aerators vs. 2 ½ gpm Aerators
- Rain Water Capture for Irrigation





## Saving\$



- **“Compared to an average building, this building saves the equivalent of about 91,000 gallons of gasoline per year, or the amount of fuel required to drive 216 million automobile miles per year. Another perspective would be to say that compared to an average building, savings here is the electricity equivalent of 18 train cars of coal if their contents were burned to make electricity.” Jim Powell, Regional Director, DOE 4-18-05**
- E.O. 13123 Goal of 52,499 BTU's/GSF was surpassed by 33% with attainment of 35,693 BTUs/GSF
- Annual Savings of 290,160 KWH
- Annual Water Savings of 400,000+ Gallons
- Return on Investment of 3.7 Years

# Environmental Sustainability



- “Green” Cleaning Products
- Recycled Janitorial Products
- Recycling of Aluminum, Plastic, Mixed Paper, Cardboard
- Rubber Mulch
- Recycle/Reuse of Carpet
- Procurement of Recycled Content Products
- Rain Water Capture for Landscaping
- Construction Debris Recycling
- IAQ Plan for Construction (Dust, VOCs...)
- Purchase Green Power (Wind, Solar, Methane)

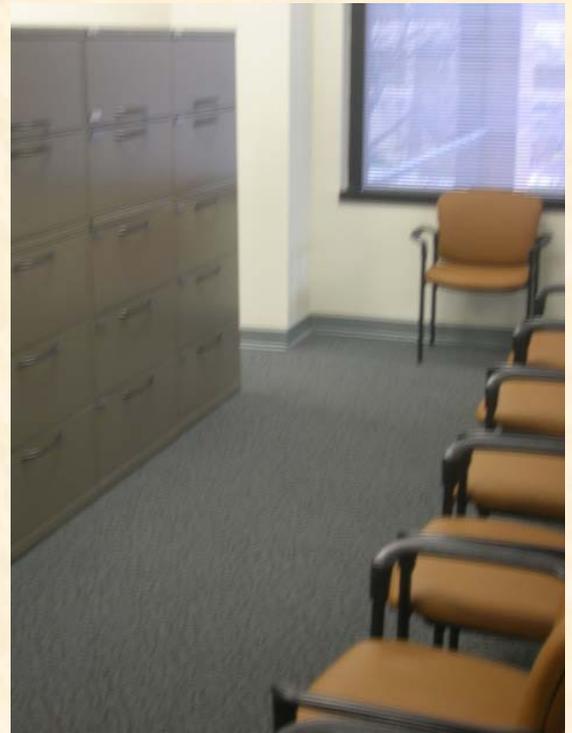
# Environmental Impact

Annually

- 30% of all waste diverted from landfill
- 13.75 tons of mixed paper
- 1,300 pounds of aluminum
- 12,000 square feet of carpet
- 700 pounds of moving boxes
- 400,000+ gallons of water



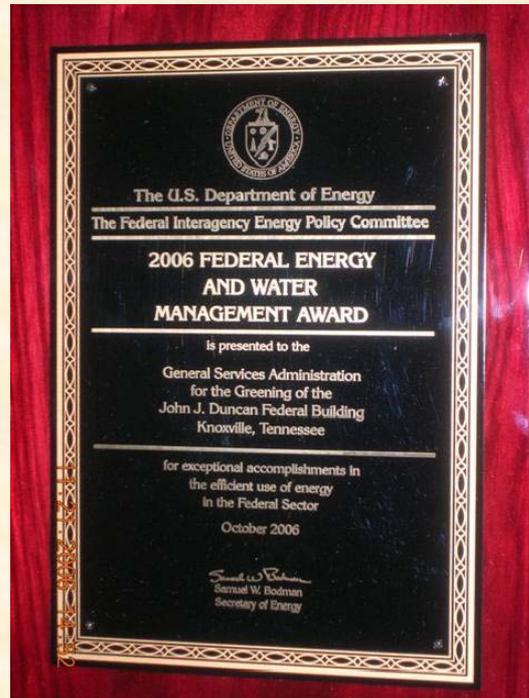




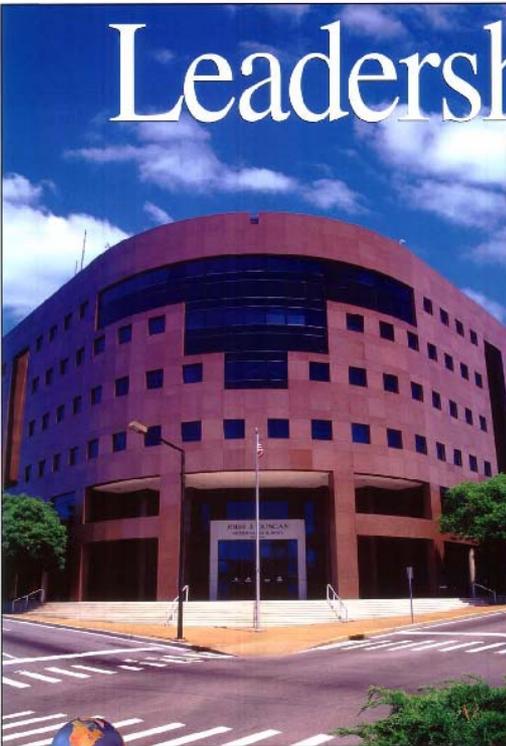
# Awards/Certifications

- Energy Star (94): 2005
- Federal Energy Management Program Designation: 2006
- Federal Energy and Water Management Award: 2006
- USGBC LEED-EB Certification: 2007
- Energy Star (95): 2007
- BOMA Southeast Region Earth Award
- BOMA International Earth Award





# Leadership



In FY 2004, a project to replace an outdated energy management system at the John J. Duncan Federal Building allowed GSA to reduce energy use and operating costs while creating a healthier work environment for building occupants. Along with the new energy management system, the project incorporated high efficiency lighting, variable frequency drives, a new cooling tower, high efficiency motors, and motion sensors, resulting in savings of almost 225 megawatt-hours annually. Restrooms were retrofitted with water saving equipment, and new secondary meters were placed on water supplies to reduce water sewage and runoff charges, saving 668,000 gallons of water each year. These and other environmentally-friendly practices have resulted in an ENERGY STAR® rating of 94 and a Leadership in Energy and Environmental Design (LEED™) certification nomination.

John J. Duncan Federal Building  
Knoxville, Tennessee



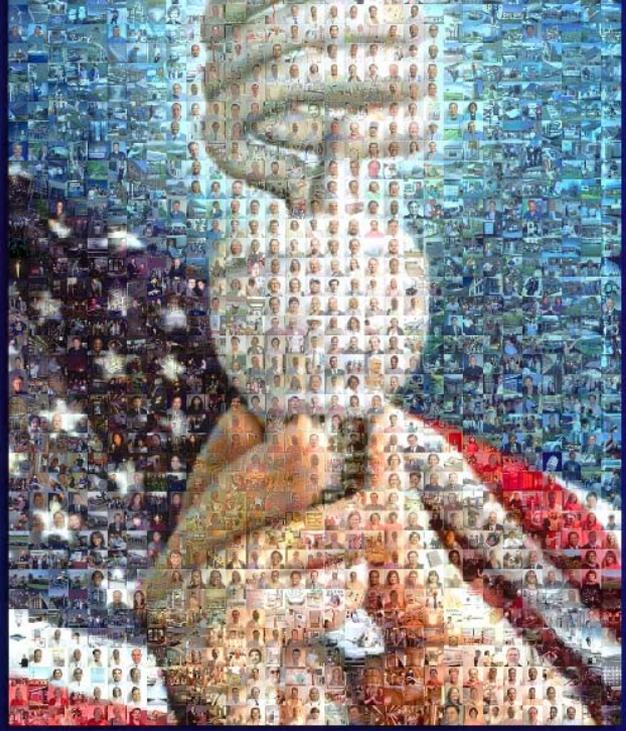
YOU HAVE  
the POWER™

U. S. General Services Administration  
Federal Energy Management Program



For more information on how you can get involved in the You Have the Power campaign, visit the TEAM website at [www.teamenergy.gov](http://www.teamenergy.gov)

BE A PART OF  
**SOMETHING BIG**



**FIND OUT HOW YOU FIT IN**

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visit: [www.energysavers.gov](http://www.energysavers.gov)

